

# California site celebrates 50 years and rededicates

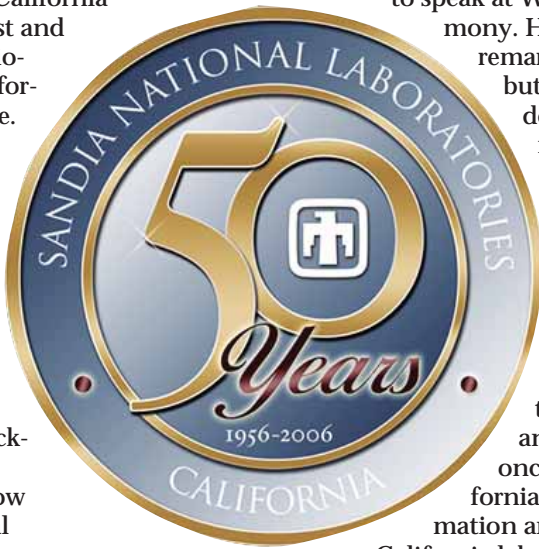
**Tom Hunter, Mim John, John Foster join former site VPs in three days of ceremonies to hail Sandia/California's contributions to the national interest over the past half century**

By Nancy Garcia

Sandia/California's 50 years of accomplishments were feted in three days of celebration last week, including a rededication ceremony in which Mim John, VP of the California Laboratory, looked to the past and future and welcomed back pioneering employees and four former vice presidents of the site.

"Our work has been shaped by our engineering and science missions and the events of the world," Mim noted, saying she felt both proud and humbled. The site was officially established March 8, 1956, to provide engineering oversight for nuclear weapons whose explosive "physics packages" were being developed across the street at what is now Lawrence Livermore National Laboratory (LLNL).

From a couple of dozen employees who initially worked in a former Navy barracks, the site grew by the 1960s to a workforce that has stayed at about 1,100. Programs branched from strictly defense to include energy, bioscience, and microfluidics. Sponsors expanded to include the



Department of Homeland Security (DHS), and interactions spread to involve industry, academia, and the state and region.

Labs President and Director Tom Hunter, himself a former California site VP, was the first to speak at Wednesday's rededication ceremony. He said the world has changed remarkably in the last five decades but he is convinced "the nuclear deterrent will capture and maintain an enduring peace that can contribute to a more confident and secure world. . . I think we can set the stage for looking at security in a whole new way."

Mel Bernstein, who had just been named the previous week as acting director of the DHS Office of Research and Development (and was once offered work at Sandia/California), acknowledged that transformation and promise by observing the California laboratory has "an incredible gift — the ability to adapt and to be flexible."

At the close of the event, retired Sandia Executive VP John Crawford, who also was a vice president of the California site, noted that the site's talented staff enjoys access to well-equipped facilities. (Continued on page 5)

**Inside . . .**

**Pulitzer Prize winner Richard Rhodes lauds site's role in preserving world peace . . . page 6**

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**Barry Schrader recalls moments big and small . . . . . page 11**

**Lab News announces launch of California lab (March 8, 1956) . . . . . page 11**

## Report: Address global water scarcity, water quality issues around the world now

By Chris Burroughs

The time is now to address the devastating effects of increasing water scarcity and declining water quality around the world. This is according to a recently released white paper written jointly by Sandia and the Center for Strategic and International Studies (CSIS), a Washington, D.C., think tank.

The paper, "Addressing Our Global Water Future," came about following two conferences last year in Washington. There, representatives of high-profile influential companies, government officials, and technical experts discussed US policies in regions of the world where the US has strategic interests. Discussions centered on countries with dwindling fresh water supplies and the technologies needed to help resolve the water problems.

The primary white paper authors are Howard Passell (6115) of Sandia and Laura Keating of CSIS. Numerous others from both Sandia and CSIS contributed to the document.

Why does Sandia care if there is adequate potable drinking water in places other than the US?

The reason, says Ray Finley, manager of Geo-

(Continued on page 4)

**Sandia/CSIS white paper discusses how lack of potable water can destabilize regions and cause security problems for the US.**



**Cell phone lockboxes at key entry points to tech areas should reduce Labs' security infraction rate. Story on page 2.**

# Sandia LabNews

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## Global Nuclear Energy Partnership: Another step on a long and winding road

**Question: What was Sandia's role in the president's announcement of a Global Nuclear Energy Partnership?**  
**Answer: Persistence, consensus-building, and staying on message in a low-key way**

By Will Keener

To many citizens, the announcement of a nuclear energy partnership in President Bush's February State of the Union address was news. For Sandians involved in helping to shape and achieve the vision of an environmentally and politically safe future fueled by nuclear power, it was another step in a decade-long journey.

The start of the journey came in the winter of 1996, when then-VP Tom Hunter made a presentation, embracing a vision he and col-



leagues Roger Hagengruber and Joan Woodard had developed, to the DOE's Bruce Twining. This was followed by some earnest discussions with Sen. Pete Domenici after what Tom Sanders (6020) describes as "the zeroing of the nuclear energy R&D budget" in Congress in 1997.

Sandia has continued to participate, often quietly in the background, in dozens of studies, meeting, briefings, and collaborations to further the cause of nuclear energy.

Tom Sanders, manager of Sandia's Global Nuclear Futures initiative, stacks dozens of documents and presentations on his desk as he thinks back over the years.

"Basically, if you run through the chronology, we have been urging some of the things that came out of GNEP (Global Nuclear Energy Partnership) since 1996," he says. "Our concern as a

(Continued on page 3)

**Kilimanjaro climb is experience of a lifetime for Sandia colleagues. Story on page 16.**



**Watching out for each other: Behavior-based safety has a proven track record of success. Story on page 13.**



What’s what

It’s March Madness time, which made me think after getting an e-mail from Mark Jaska (8353) that if Sandia was in the market for a fight song, maybe Jerry Reed’s hit from a few years back – *When You’re Hot, You’re Hot* – would work.

Mark e-mailed that he Googled “millikelvin” recently and was surprised to find that work at Sandia was at the very top of the list on the cold end of the temperature spectrum.

“I thought that was kind of ‘cool’ at the time, with absolutely no pun intended. Really!” (Right, Mark. . . really!)

“Today, when I saw the *Sandia Lab News* on the web, I noticed the temperatures generated by the Z machine being hotter than anything else around, so I did a quick Google search on two keywords – this time “Kelvin” + “billion” – and Sandia again came up at the top of the list. It looks like Sandia has both ends of the temperature spectrum covered.”

It seems so, Mark, so like Jerry Reed sang in that hit tune, “When you’re hot, you’re hot. . . when you’re not, you’re not!”

Okay, no groaning, now. Maybe just an unofficial fight song.

\* \* \*

A little more rummaging in the mailbag turned up an interesting note from Steve Walcott (10322) about Albuquerque’s official altitude, given in this space in the Jan. 6 issue of *Lab News* as 5,314 feet.

“Given the hilliness (is that a word?) of the Albuquerque terrain,” he wrote, “how did you pick 5,314 for its altitude?”

“FYI, the photovoltaic site (where G meets F by the Eubank Gate) lists Sandia’s ‘official’ altitude as 5,436 feet. Meanwhile, the FAA lists the threshold of runway 26 (point closest to us) as 5,355 feet (the official airport altitude). But they list the thresholds of runways 30 and 35 as your 5,314 feet and the thresholds of runways 8 and 12 as 5,312 feet, of runway 17 (along Gibson) as 5,319 feet, and runway 3 as 5,305 feet.

“Then, there is the base of the Tram, and the Rio Grande down by Los Lunas, etc., etc. I'd hate to have to give an elevation for Albuquerque. We ain't flat Texas!”

\* \* \*

Our phone system uses numbers, not letters, but businesses sometimes select telephone numbers whose corresponding keypad keys spell out a special service. Like a travel agency whose phone number is 244-8747, but advertises as BIG TRIP. Or a tire store with the number 227-8473, or CAR TIRE. With enough time and exposure, such gimmicks – called mnemonics – can be helpful and useful.

But they have to resonate. If they don’t resonate, they don’t work.

At Sandia, the Corporate Computing Help Desk mnemonic phone number 845-CCHD works (if you can remember the prefix), because sooner or later, we all have to call CCHD. Some others are a stretch, making sense to their insider creators, but leaving outsiders scratching their heads.

So, from a communications point of view, if you’re going to promote your services with a mnemonic phone address, be sure it works in the wider world – not just in your group.

– Howard Kercheval (844-7842, MS 0165, hckerch@sandia.gov)

Cell phone lockers being installed at some gates

You may have noticed boxes like the one in this photograph located outside the limited area entrance into MO308. They are the result of a joint Safeguards & Security and Facilities initiative to help reduce cell phone infractions. Reminder: These lockers are not for everyday use; they are to be used when people forget to leave their cell phones in their vehicle or when visitors are accessing the site.

Sandia’s Facilities people expect to complete installation by mid-April. Due to the expense of installation, the plan is to provide lockers at just those locations listed below.



Tech Area 1

Gate 2/Bldg. 801 — 20 lockable slots. Interior vertical installation, west of Gate 2.

Gate 6/Bldg. 861 — 20 lockable slots. Exterior vertical fence installation, east of Gate 6.

Gate 10 — Exterior horizontal fence installation, west side of gate.

Gate 15/Bldg. 822 — 10 lockable slots. Interior horizontal installation onto existing wood phone booth.

Gate 823 — 20 lockable slots. Exterior horizontal installation onto existing Plexiglass enclosure.

Tech Area 2

Bldg. MO308 — 10 lockable slots. Interior vertical wall installation on north wall in lobby.

Bldg. 956 — 10 lockable slots. Exterior horizontal installation. Attached to wall on east side of vestibule.

Tech Area 3

Bldg. 6505/MO300 — 10 lockable slots. Exterior vertical installation onto MO300.

Bldg. 6539 — 10 lockable slots. Exterior horizontal fence installation, east side.

Bldg. 6584 — 10 lockable slots. Interior vertical installation, outside of VTR door.

Bldg. 6610 — 10 lockable slots. Exterior vertical fence installation, southwest side of fence, right side mounted.

Bldg. 6620 — 10 lockable slots. Exterior vertical fence installation, northeast side of fence, right side mounted.

Tech Area 4

Bldg. 960 — 10 lockable slots. Exterior horizontal fence installation, Limited Area gate southeast of Building 960 (placed on the PPA side) Tech Area 5.

Bldg. 6577 — 10 lockable slots. Interior vertical installation, next to existing phone booth in lobby.

Bldg. 6585 — 10 lockable slots. Interior vertical installation, 1st Floor, next to existing phone booths, near restrooms.

If you have questions or concerns about these storage lockers, the Facilities point of contact is Matthew Brito, 844-7636.

Donation accounts set up at SLFCU for David Stokebrand, Diana Helgesen

Accounts have been established at the Sandia Laboratory Federal Credit Union for Dave Stokebrand (5416) and Diana Helgesen (5419). Both recently suffered severe injuries in an automobile accident while on Sandia travel in Kodiak, Alaska (*Lab News*, March 3), resulting in their hospitalization at Anchorage Providence Medical Center.

Donations to the accounts will help the families of Dave and Diana as they deal with the issues and expenses related to the accident. Anyone wishing to make a donation can do so using SLFCU account number 210670 and stipulating either the David Stokebrand or Diana Helgesen subaccount.

For more information, contact Earl Creel (5416) at 844-8355 or eecreel@sandia.gov.



Sandia National Laboratories

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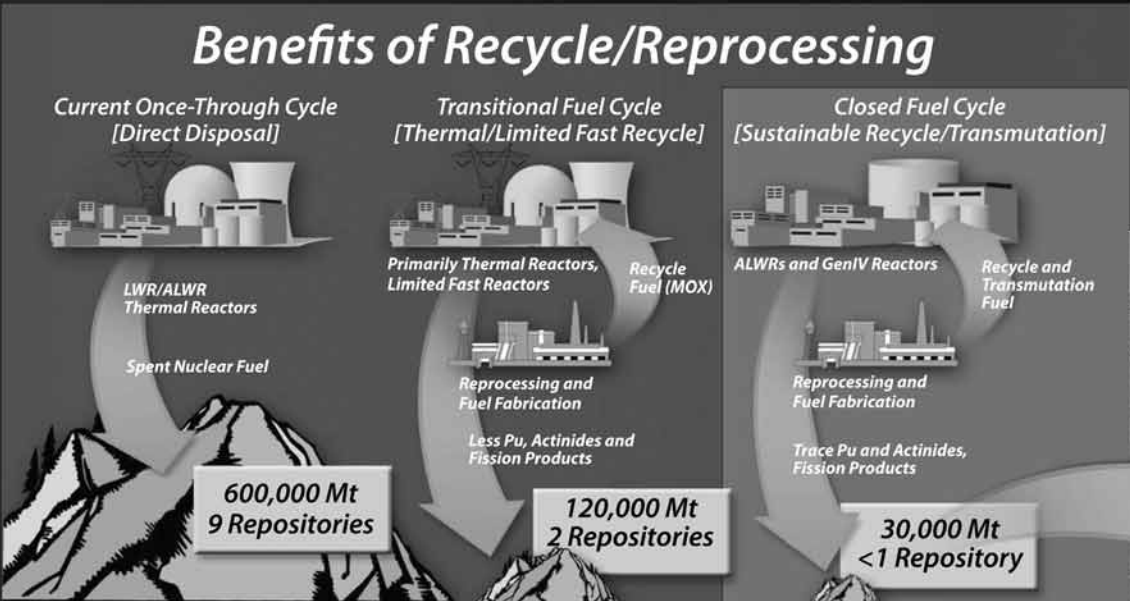
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# CLOSING THE FUEL CYCLE



## Helping Solve Spent Fuel Issues



Yucca Mountain

Illustration by Michael Vittitow

IMPROVING THE NUCLEAR FUEL CYCLE, first with recycling and then reprocessing, can dramatically minimize the tonnage of nuclear wastes destined for repository disposal.  
Mt=metric tons

## Nuclear power

(Continued from page 1)

national security lab has always been that you can't influence nuclear safety, security, and proliferation risks at the global level if you're not in the nuclear business. By that I mean we, as a country, have to be on the leading edge of research in both the universities and the labs and have an American-based nuclear supply industry that is capable of being a leading supplier across the globe."

### Invisible leadership

With Tom as chief strategist and with help from dozens of Sandians from across the labs, Sandia set in motion a plan to work with non-governmental organizations, other labs, DOE, Congress, and other decision-makers. "Our role has been invisible leadership," says Tom, "organizing and articulating the arguments for US leadership from the perspective of the national security implications of what might happen, domestically and globally, if we don't go forward with nuclear energy."

By 2001, Sandia had established a relationship with the Kurchatov Institute in Russia to

*"Our concern as a national security lab has always been that you can't influence nuclear safety, security, and proliferation risks at the global level if you're not in the nuclear business."*

Tom Sanders

develop and articulate an argument for the original nuclear powers providing global nuclear services together. This effort was later expanded at a Vienna, Austria, meeting, chaired by Sandia's then-Director C. Paul Robinson, to involve seven US and nine Russian federation laboratories (*Lab News*, Aug. 20, 2004).

More recently, the effort took on new momentum with growing support of the White House and other leaders. A "kitchen cabinet" made up of high-level private advisors helped press the ideas forward. President Bush's August signing of the Energy Policy Act of 2005 at Sandia (*Lab News*, Aug. 19, 2005) further propelled the nuclear power agenda.

### Uniquely positioned

GNEP will provide opportunities for Sandia to continue its efforts in a number of areas, says VP for Energy, Security, and Defense Technology Les Shephard (6000). "We are uniquely positioned to lead the efforts in nuclear facility safety, security and reliability, nonproliferation, current and future safeguard practices, and the myriad of issues associated with the disposal of radioactive waste." In addition, Les expects Sandia to be actively engaged with various laboratory, university, and industry partners in modeling and simulation using high-performance computing capabilities, advanced manufacturing, a center for transuranic fuel, and the development of small transportable reactors.

"This is a time for the multilab complex to really come together," says Les.

In fact, a seven-laboratory action plan — produced as a Sandia report in 2003 — set a tone of cooperation among DOE's laboratories and strongly advocated for measures that are included in the partnership proposal. (Los Alamos, Lawrence Livermore, Oak Ridge, Idaho National Laboratory, Argonne, Pacific Northwest National Laboratory, and Sandia comprise the group.)

One conclusion of that report was that the US needs "a technology leap to the 21st century" to reestablish global influence. Such a leap involves a new generation of large reactors with twice the efficiency of the current generation, with smart manufacturing to:

- reduce wastes by 90 percent,
- provide renewable fuel supplies for several centuries, and
- enable export of long-lived right-sized reactors to developing world markets.

(Continued on next page)

## GNEP: A better, cleaner, safer world

*"For years, there was this sense that we could tolerate tyranny for the sake of energy. . . . My main obligation is now to protect the American people, and to confront an ideology of hate. . . . The best way to diversify . . . away from dependence on foreign sources of energy is for us to take advantage of new technologies and expand safe nuclear power in the United States."*

President George W. Bush  
Mainz, Germany  
Feb. 23, 2005

As part of President Bush's Advanced Energy Initiative, the Global Nuclear Energy Partnership (GNEP) seeks to develop worldwide consensus on expanded use of nuclear energy to meet growing electricity demand. This will require a nuclear fuel cycle that enhances energy security, while promoting nonproliferation.

The new initiative, which calls for a \$250 million investment in FY07, is a comprehensive strategy to expand emissions-free nuclear energy worldwide by demonstrating and deploying new technologies to recycle nuclear

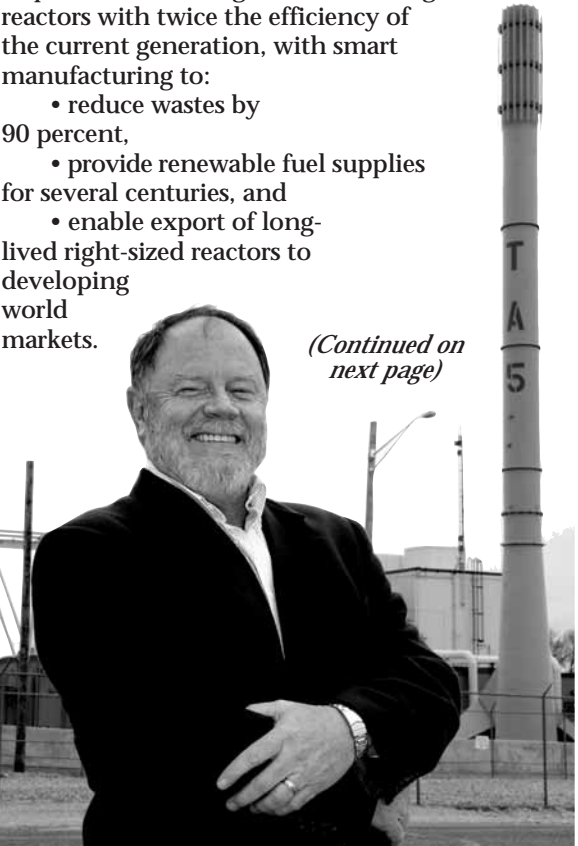
fuel, minimize waste, and improve our ability to keep nuclear technologies and materials out of the hands of terrorists.

The concept is to have nations with secure, advanced nuclear capabilities provide fuel services — fresh fuel and recovery of used fuel — to other nations, which agree to employ nuclear energy for power generation purposes only.

The closed fuel-cycle model envisioned by the partnership is tied to development and deployment of technologies to enable recycling and consumption of long-lived radioactive materials.

The partnership will demonstrate the technologies needed to change the way used nuclear fuel is managed — to build recycling technologies that enhance energy security in a safe and environmentally responsible manner, while simultaneously promoting nonproliferation.

"If we can make GNEP a reality, we can make the world a better, cleaner, safer place to live," said Energy Secretary Samuel Bodman in his February announcement.



TOM SANDERS

Photo by Randy Montoya



# Water

(Continued from page 1)

hydrology Dept. 6115, is that Sandia, as a national security laboratory, has the responsibility to help provide for the security of the US. That includes regions of the world that are of strategic importance to the US and can impact this country's national security.

"The lack of clean water can create conditions that lead to destabilization in regions of the world that are already poor and having problems," he says. "Lack of potable water can result in famine, conflict over resources, and poor governance. This threatens the security of those countries and ultimately the security of the US."

Examples can be seen in the instability in the Middle East and Africa — both places where fresh water is in short supply for both consumption and sanitation.

The report expands this theme, saying that "global trends of increasing population, increasing resource consumption, and decreasing natural

resource availability — including fresh water — have pushed many human social, economic, and political systems to an important tipping point. . . . We face large-scale future dislocations and crises unless significant action is taken now by leaders in both developed and developing countries."

The white paper made several other findings. They include:

- Water is a foundation for human prosperity. Adequate, high-quality water supplies provide a basis for the growth and development of human social, economic, cultural, and political systems. Conversely, economic stagnation and political instability will persist or worsen in those regions where the quality and reliability of water supplies remain uncertain.
- Water problems are geopolitically destabilizing. Water scarcity and poor water have the potential to destabilize isolated regions within countries or regions sharing limited sources of water. There is an increasing likelihood of social strife and armed conflict resulting from pressures of water scarcity and mismanagement.
- Poor governance and poor economies in regions around the world where water is scarce impair the application of innovative technology and innovative policies.
- Solutions must be innovative, revolutionary, and self-sustaining. Traditional technologies for improvement of freshwater availability and quality are inadequate to meet global needs in a timely way.
- Effective water planning and management at local and regional levels require collaboration from a variety of people, including farmers, urban developers, environmentalists, industrialists, policy makers, citizens, and others.
- No single government agency, nongovernmental organization, corporation, international organization, or academic institution can provide all the expertise required to meet the challenges of solving the water challenges. Partnerships are required.
- New ways of funding water projects internationally need to be developed.
- Solutions must be tailored to the socio-economic, political, and geographic conditions

## Region-by-region water review to begin

As recommended in the white paper "Addressing Our Global Water Future," Sandia and the Center for Strategic and International Studies (CSIS) will be conducting a region-by-region study of water needs and issues in China, the Middle East, and Africa over the next two years. These are all places considered important to US security.

Starting with the Middle East, they will meet with people from the region to identify region-specific water problems. They will then have workshops with government officials, technical experts, and representatives of financial institutions to see how US policies can be revised to help with a region's water issues and ultimately lead to enhanced security for the US.

of a region.

- Water can be a powerful and effective foreign policy tool. Finding solutions to water problems can significantly support many US strategic objectives.

To help resolve many of the world's water issues, the white paper recommends the US government develop a long-range strategy for how it engages internationally in water resources.

The paper also says the US should carry out an inventory of existing international water-related policies and projects, identify a lead agency to coordinate the development of an integrated strategy, undertake a region-by-region review of resources, and engage regional experts, third-party groups, and the community to come up with solutions.

"Ultimately what the report says is that we must acknowledge that US international water policy has implications that transcend traditional humanitarian and foreign assistance interests," Finley says.

### White paper: 2.6 billion people don't have access to basic sanitation

More than one billion people on Earth — about one-sixth of the global population — rely on water sources that are unsafe, unreliable, or difficult to access for their daily washing, drinking, cleaning, and cooking.

More than one-third of the world's population, or about 2.6 billion people, does not have access to basic sanitation. As a result, millions of people, most of them children, are suffering and dying annually from diseases related to poor water quality. Experts believe the scale of this challenge could double in the next two decades.

# Nuclear power

(Continued from preceding page)

## Many roles to play

Some possible roles for Sandia include:

- Demonstrating new, smaller reactor systems for a substantial international market. By teaming with Los Alamos, Argonne, and others, Sandia can leverage its small-reactor design experience to support development of a new US nuclear supply industry.
- Using Sandia's Power Tower to study processes for hydrogen generation, Sandia can create a fast-track large-scale demonstration of the feasibility of hydrogen production in a nuclear reactor.



- Developing, testing, and qualifying new materials and electronics for the extreme radiation and thermal environments of next-generation nuclear reactors.
- Contributing to the management and integration of repository science supporting Yucca Mountain, and in security, safety, and licensing efforts.
- Using science-based engineering to model and simulate the fuel cycle to improve the process of moving from raw materials to fuel to reprocessing and provide technology for process controls and transparent operations.
- Using Sandia's materials know-how to develop new fabrication techniques for specialty reactor components, providing a competitive advantage to US industry.
- Finding new approaches to physical security systems and new technologies needed to ensure control of materials in all phases of the nuclear energy process.

## Far to go, but future is bright

While there is far to go along the road, Tom Sanders is optimistic that the vision of a nuclear-powered world is achievable, even inevitable. "There's no way that there's a future without global nuclear energy. You can't ignore the energy achievable from fission and fusion resources. It is renewable and sufficient to supply mankind for thousands of years," he says. In the short term, he plans to continue what he's been doing — staying on message, building an expanding constituency, leading from behind the scenes. "Leadership is earned not delegated," says Tom, "and we must keep moving forward, leading by doing."

## Help for you, and fun: IES Mercado, a service info fair, is March 22

The Integrated Enabling Services (IES) SMU is having its second IES Mercado, a service information fair, on Wednesday, March 22, in front of the Thunderbird Cafeteria from 11 a.m. to 1 p.m. IES is the Labs support team for all things operational — from the simplest to the most complicated of issues.

"NNSA has told Sandia we have long-standing operational issues and our executive office has repeated that message," notes Doug Weaver, IES deputy director. "We in IES want to reach out to the Labs, to our customers, and offer our support in tackling some of these issues once and for all. And we want to have a little fun while we are at it."

What are the issues that concern NNSA? Sandia's operational issues are outlined in the Performance Evaluation Assessment Report (PEAR) in areas of ES&H such as rad work permits, fire safety compliance, and electrical self-assessment as well as in the security and financial reporting areas.

"Working these issues takes time away from mission work," Doug acknowledges, "but they simply must be done and done right. IES has expertise in all these operational areas. Our tent will have 25 tables all staffed with IES experts in the areas where Sandians need the most help."

Besides friendly, knowledgeable IES folks, the Mercado also features IES cream bars and giveaways. Look for the tent and the IES folks with brightly colored clipboards to ask your thorniest operational questions. IES guarantees you will make a personal connection with an IES expert to put you and your project on the road to resolving those longstanding operational issues. Information: Jane Zingelman, 845-0433, IES SMU 10710.





AT THE CALIFORNIA SITE REDEDICATION ceremony are, from left: Frank Murar (a pioneering 1956 employee), retired California Laboratory VP Dick Claassen and his wife Ruth, Sandia President and Director Tom Hunter, 1956 pioneer Mickey Rindone, retired California Laboratory VP Tom Cook, (partially hidden) former California Laboratory VP John

Crawford (who later retired as Sandia executive vice president), California Laboratory VP Mim John, Linda Barncord (representing her father, 1956 pioneer C.R. Barncord), 1956 pioneer Pat Gildea, and 1956 pioneer Gayle Cain. (Also attending was 1956 pioneer R. L. Siglock's wife Eleanor.) (Photo by Randy Wong)

# California site

(Continued from page 1)

ities and responds with agility to opportunities, expertly melding science and engineering.

## 'Pound for pound you're the best'

Keynote speaker Johnny Foster, retired director of LLNL, also lauded that uniqueness, saying, "Pound for pound, you've outperformed the other labs."

He recalled the question posed to him by the director of Los Alamos National Laboratory in 1962: whether LLNL should concentrate on nuclear work and LANL should focus on science? He responded after a moment that he believed both should continue competing and cooperating.

Foster said he still believes competition is critical for technological leadership in the face of new potential adversaries.

As nuclear weapons age and are retired from

the stockpile, he said, the deterrent threat must still be viewed as credible. There are less than one-tenth the number of active warheads and warhead types in the current stockpile than during the Cold War. With approval of the Reliable Replacement Warhead (RRW) program, new components and features may be introduced, but the possibility that unknown failure modes would be introduced requires a higher standard of reliability, Foster said.

He offered four suggestions:

- Create an improved process for learning from past failure modes and competitively develop a new learning process.
- Apply the new process to the design and production of refurbished weapons and the RRW.
- Provide additional assurance of reaching targets by using two different warhead types for each weapon system.



of the 82 Sandians who worked at the California site in 1956, marveled at the tremendous growth. He said the city had 6,000 residents and he had to wait two months for a house to go on the market, buying one of the two that went up for sale. Also present at the ceremony were Sandia pioneers Frank Murar and Pat Gildea, as well as about 900 employees or retirees and guests.

The audience heard remarks from LLNL's Bruce Goodwin, associate director for Defense and Nuclear Technologies; Jerry Paul, principal deputy administrator of the National Nuclear Security Administration; Jim Decker, principal deputy director of the DOE Office of Science; and Garry George, head of the Engineering and Systems Division of the United Kingdom's Atomic Weapons Establishment.

## Forming a vision for the future

Former California Laboratory VP Tom Cook commented that he was particularly proud the slate of speakers made so much mention of the role of science. His successor to head the site, retiree Dick Claassen, said he was gratified by the interaction with all the outside groups (for instance, the Alameda County Board of Supervisors had a proclamation presented at the event).

"It was a time to look back at both the people and the challenges that frame this laboratory," commented Tom Hunter, who was vice president of the site just prior to Mim. "Now it's really important to take those and form the vision for the future. We see Sandia/California as an important part of that. The strong relationship with Lawrence Livermore was recognized by all the speakers. It's deeper than the mission in how people engage each other; there is camaraderie as they collaborate and compete."

Added John Crawford, "So many organizations recognized the value of this laboratory over a long period of years, it confirms they are adding a lot of value. Hopefully these kinds of comments will make people understand their work is appreciated."

Mim summed up factors in that success: exceptionally committed staff, leadership, outstanding partners, and a very supportive set of sponsors.



REMEMBRANCES — California Laboratory VP Mim John talks with retired Lawrence Livermore National Laboratory Director Johnny Foster, who was keynote speaker at the Sandia/California rededication ceremony. She is holding a vintage W56 safety device, a memento presented by LLNL Associate Director Bruce Goodwin. (Photo by Randy Wong)

- Introduce an incentive reward system for Red and Blue teams during the annual certification of the stockpile.

He said ensuring the stockpile is safe, secure, reliable, and credible is so important that Sandia's California and New Mexico laboratories should compete in addition to LANL and LLNL and directors of all four laboratories should be called upon when certifying the stockpile.

"This is a first-class lab in a beautiful setting," Foster concluded. "I give great credit, particularly to all the folks who have worked here over the years."

Gayle Cain, one



# Pulitzer Prize-winning historian honors Sandia’s contributions to global peace, says ‘your work helps hold world together’

By Nancy Garcia

Author Richard Rhodes, commemorating Sandia/California’s 50th anniversary in a talk titled “Sixty Years of Living with the Bomb,” noted Sandia’s historically low profile and offered congratulations for “a hell of a story.”

His book *The Making of the Atomic Bomb* received a Pulitzer Prize. He went on to write *Dark Sun: The Making of the Hydrogen Bomb*, and is working on a book about the end of the Cold War. Trained as a historian, he is currently an affiliate at Stanford’s Center for International Security and Cooperation.

“People talk casually about the remarkable safety and security of America’s nuclear weapons down through the decades,” Rhodes said, “without realizing the enormous amount of creative work that went into making them safe. I know you’ve done and are doing much more than that.”

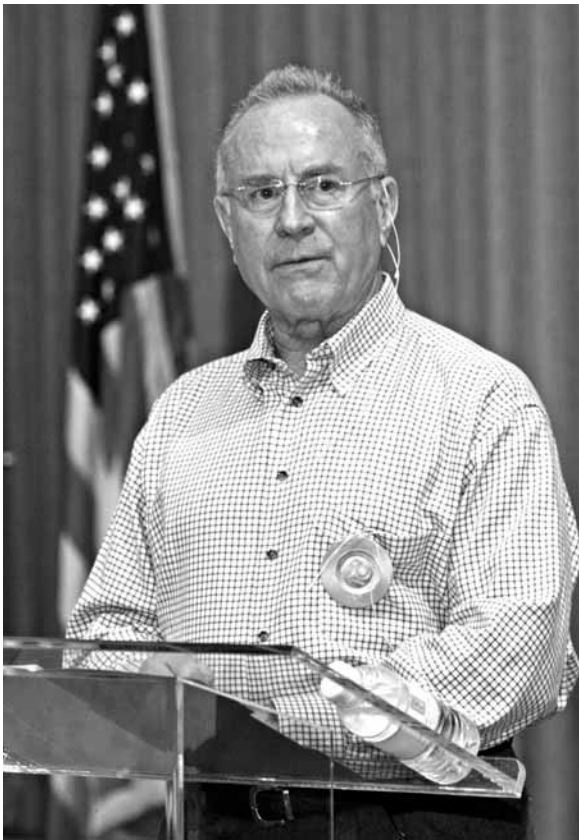
He segued into reflecting upon 20th century advances, particularly two he termed mature technological revolutions — nuclear energy and public health.

“Public health,” Rhodes said, “saved more lives in the United States alone than were lost throughout the world in all the terrible wars of the 20th century — losses of combatants and civilians estimated to total approximately 120 million lives.”

Saying the world needs “more energy, not less,” he said he believes opposition to nuclear power is immoral because it offers essentially unlimited energy that could help level the quality

*“People talk casually about the remarkable safety and security of America’s nuclear weapons down through the decades,” Rhodes said, “without realizing the enormous amount of creative work that went into making them safe.”*

Richard Rhodes



RHODES REFLECTS — Looking back on 50 years and more of innovation, author Richard Rhodes drew parallels between nuclear know-how and public health advances. His talk kicked off the observance of Sandia/California’s 50th anniversary. (Photo by Randy Wong)

of life that follows from disparities in distribution of material resources.

He believes that public health and nuclear energy have already saved and improved billions of lives and that one cause of premature death is war, so it could be viewed as another problem in public health.

He lauded the nuclear deterrent, saying the knowledge of how to release nuclear energy put an end to world-scale war, so that, since 1945, the number of deaths from wars annually has ranged from 1 to 2 million, fewer than the World Health Organization’s estimate of 3 million deaths a year from tobacco.

He also lauded an increased emphasis on public health since 9/11, saying, “the way to deal with a potential bioterror problem is to have a better public health system.”

## Recalling the Acheson-Lilienthal Report

He suggested that it may be nuclear knowledge, not arsenals, that could guard the peace, recalling the 1946 recommendations of the Acheson-Lilienthal Report that envisioned a distributed network of nuclear knowledge, enabling countries to build weapons within months if needed. “With sufficient transparency,” Rhodes said, “it would have policed itself.”

The United Nations rejected the recommendations, but the world has voluntarily moved closer to that direction, for instance with the establishment of a World Nuclear University under Chancellor Hans Blix in 2003 to encourage safe advancement of nuclear technology for economic development and civilian uses.

“When, in the years ahead, the declared nuclear powers come to trust that deterrence will work even better with three months’ delivery time from factory to target than it worked with 30 minutes delivery time from submarines and missile silos,” Rhodes said, “then the vision of distributed virtual deterrence that the Acheson-Lilienthal Report described in 1946 will be fulfilled.”

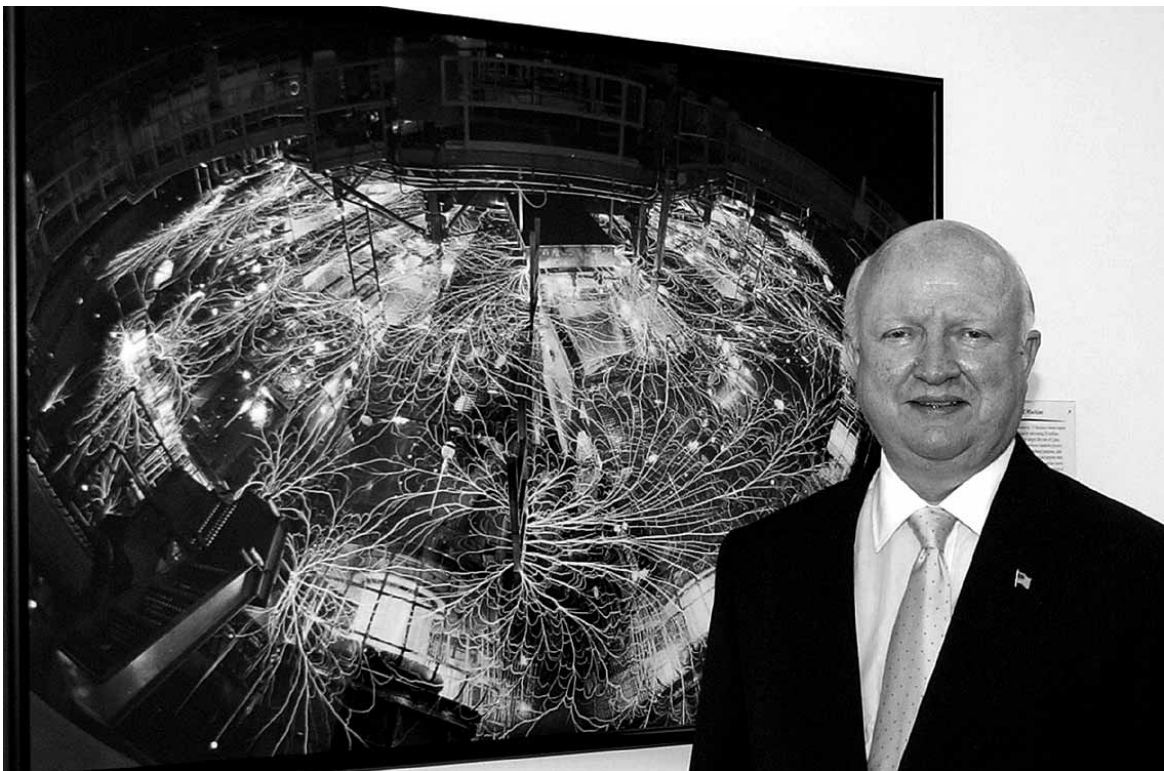
About the end of the Cold War, he observed, “I have the sense that we’re still sort of celebrating victory and haven’t begun to think through the new world now.” He said that Hans Blix had commented about the nuclear arms race that it looked as though the US were racing with itself. “The question is, in fact, what do we need and why?” Rhodes opined.

While acknowledging the concern of having two or three new nuclear powers after the Cold War concluded, he said the marvel is that there are not 30 or 40 and added that he would like to see the administration reduce the nuclear arsenal.

Rhodes concluded on an optimistic note. “I hope you’ll pause occasionally to recall the value and the virtue of your work. I hope you’ll remind yourselves that the wholly honorable purpose of your enterprise is nothing less than the alleviation of human suffering. Your work helps hold the world together, and certainly helps prevent its being blown apart.”

*“I have the sense that we’re still sort of celebrating victory and haven’t begun to think through the new world now.”*

## Secretary Bodman showcases Z machine — and famous Z photo — in his D.C. office



WHEN DOE SECRETARY SAMUEL BODMAN made his first visit to Sandia, he was briefed on the Labs’ breakthrough research on the Z machine. He was impressed with the work — and with the Z machine photograph by Randy Montoya, which has probably been published more often than any other image in Sandia history. Bodman asked Randy to provide a large print of the photo for display in his Washington offices. The secretary promised to send us a photo commemorating the display. Here it is.

## California Site historical posters showcase 50 years

In commemorating Sandia/California’s 50th anniversary, graphic artist Ken Ball (8528), with research and writing from *Lab News* California reporter Nancy Garcia, produced a display featuring the previous decades with pictures, text, and a timeline. On the ensuing pages the *Lab News* publishes five of those six posters (we’ll try to publish the sixth in a later issue).

The display is currently mounted in the lobby of the Combustion Research Facility auditorium (Bldg. 904). Much of the research built upon a collection of recollections that has been prepared for future publication. Ken and Nancy would also like to thank all their colleagues, members of the event planning committee, and the retirees who assisted in gathering and winnowing down the historical information.







# CELEBRATING 50 YEARS



Sandia National Laboratories  
*Livermore, California*



## *The Beginnings*

*S*andia/California officially opened in March 1956 as a partner to what was then called the University of California Radiation Lab to design, engineer, and deploy the nation's nuclear weapons. Sandia National Laboratories became an independent laboratory in 1949 in Albuquerque, and can trace its early roots back to the Z Division of the Manhattan Project. Since the early 1950s, Los Alamos National Laboratory and Lawrence Livermore National Laboratory competed to design the "physics package" of nuclear weapons in the growing stockpile. Sandia's role has been to design, engineer, integrate, and test the thousands of parts that make the device functional, safe, secure, and reliable.



### *What does the future hold for Sandia/California?*

*W*e expect our core to remain focused on nuclear weapons because of the clear commitment of many existing and potential nuclear states and subnationals to maintain and advance their capabilities. At the same time, the nature of the threats facing our nation today is becoming more complex. Countering chemical or biological terrorism is likely to be an abiding part of our future, so perhaps not surprisingly, we are moving into the bioscience and homeland security areas and expect to see that part of our mission space expand even further in the coming years. As in the past, energy is again considered a key issue underpinning global security, and this increased national focus, building on our excellent foundation in combustion research, is part of the vision for the site's future over the coming decade. As in the past 50 years, Sandia scientists, engineers and researchers will continue to play a vital role in keeping the nation safe and secure. Here's to the next 50!



Mim John  
Vice President  
Sandia National Laboratories/California  
March 2006





# Across the decades, 'exceptional service' is a constant



## 1956-1966

Sandia National Laboratories  
*Livermore, California*



A photographer points his camera northwest toward East Avenue around 1956.



Some of the first Sandians at the Livermore facility in 1955-56. Left to right, front row: Benjamin Fisher, Robert Sagueck, Vernon Field, Wayne Grimsrud, Orval Wallen, Mary Van Brocklin, Nece Byrd. Back row: Charles Barnard, Charles Gomp, Clifford Erickson, Gayle Cain, Charles Winter, Frank Thomas, James McMillan, William Marsh.



Supervisor Lee Davis with the W47/Mk I reentry vehicle for the Polaris missile.



Sandia's first woman engineer, Betty Carrell, is shown in 1961 in the Environmental Testing Lab examining a telemetry package.



The 14C area in 1964. (Left to right) Jerry Ward, Lou Rounsky, Dennis Sparger, Bert Folks and Dave Arnett.



Entrance to Sandia in 1958 looking towards building 911 which was finished in October of 1957.



Mathematician Carol Shulver with a 3-D math model. c. 1962



Bill Pontler and Roger Baroudy examine the W62/Mk12 reentry vehicle for the Minuteman III. This project was authorized by the Air Force in June 1964.



Bob Dewhurst outside the Thunderbird Theater, Sandia Livermore's display at the Alameda County Fair. c. 1959



Jack Howard was named first director of Sandia/California in 1956.



Robert Poole became VP for Sandia operations at Livermore in November 1957.



Barthard Briggs taken over as VP for Sandia operations at Livermore in 1961.




## 1966-1976

Sandia National Laboratories  
*Livermore, California*



The computer room at Sandia/Livermore in 1960.



The Posedon flag is being presented to Tom Cook by Commander Stinner in 1971.



In 1971, Executive VP Tom Cook was presented with the E.D. Lawrence memorial award by AEC commissioner James Ramsey for his significant contributions in the nuclear weapons field.



Woody Green at work in the Dynamic Aerospace and Mass Properties Lab in 1975. The W79 is shown in the foreground and the B79 in the background.



Dennis Nelson, Clyde Taylor, and Hank Andress doing weapon vibration testing in 1972.



A flyer plate impulse test is discussed by, from left to right, Jerry Rowland, Jim Bugger, and Ray Foster in 1970.




The Nonviolent Explosive Destruct System test unit is displayed after completion of an initial test series by Chron (left to right) John Wood, Bill Pontler, and Bob Milby in 1977. The unit can destroy a nuclear weapon and contain radiation within the container.



The model machine shop was used in 1969.



Rita Garcia, left, chats with a co-worker at the key punch machine in 1966.



Investors Mo Jones, left, and Dell Elliott, right, discuss a design layout of the patented Posedon temperature control system in 1971.



During Sandia's 1972 Family Day, this family became interested in the computer terminals then used in the laboratories.



Thomas K. Cook Jr. became VP for Sandia operations in Livermore in June 1966.



In response to the safety studies conducted throughout the 1960s, the corporation established a nuclear safety assurance studies division in 1969 under Stan Spray.



Sandia/California received responsibility for filled gas bottles in 1966. Tritium research at Sandia/California set the foundation for the site's major subsequent research efforts in physics and material science, combustion, remote sensing, development of chemical and radiation sensors, and extreme ultraviolet lithography.



From its original 75 acres, Sandia purchased an additional 86 acres in 1970, 24 acres in 1979, and 228 acres in 1984, bringing Sandia/California to its current size of 413 acres.



In 1968 the Tritium Research Lab opened.



In 1975, the credit union opened a Livermore branch.



## 1976-1986

Sandia National Laboratories  
*Livermore, California*



Components of the B83 are displayed by four Sandians who worked in the mechanical and electrical B83 project divisions. Included are the jacked parachute (at left), all filter pack, preflight controller, firing set and the drop test unit itself. From left to right, Mike Newman, Rex Eastin, Roger Page, and Jim Dremelas. June 1981



Vern Barr, who became team supervisor of the Electronics Prototype Laboratory, in 1974.



At the Solar One Central Receiver in Barstow, California in 1977, an array of individually guided mirrors redirect the sun's energy into a central boiler atop a tower. This drives a steam turbine generator to produce electricity.



Dennis Bevers, left, and Bill Wilson, right, pose with the W82.



The W79 Artillery Shell being examined by (left to right) Jim Barham, Don Bolver and Joe Viesera. 1979



Sandia's first Cray 1-S supercomputer was 30 times faster than earlier computers.



Sandia's Board of Directors met in 1983. Shown here on a tour of the Combustion Research Facility are, from left to right, Thomas Thomson, Frank Hefron, Ian Ross, George Dacey and George Cook.



The control room of the newly completed Tritium Research Laboratory, Building 906, opened in September 1977. Here Bill Wall is at the keyboard. The facility operated until 1992 and then was converted into the Chemical and Radiation Detection Laboratory in 1990.



Headlines in Jan. 25, 1980 Bay Area newspapers proclaim the earthquake news, and proved to be popular collectors' items.



Combustion Research Facility, 1981. With torch in hand is associate director, DOE Office of Basic Energy Sciences, Jim Kato. Looking on are (clockwise) Sandia President, Morgan Squire; (right) Sandia California Vice president, Tom Cook; Combustion Sciences Department Manager, Don Bartley; Director, DOE Division of Energy Conversion and Utilization Technology, Karl Baerlein; Director, DOE Division of Chemical Sciences, Elliott Pierce; and Sandia Livermore Director Arlyn Blackwell.



Dick Closson became VP for Sandia operations in Livermore in 1982.



Sandia/California worked on directed energy weapons in support of SDI. SDI was envisioned as a satellite-based nuclear defense system, which would destroy incoming missiles and warheads in space, thereby eliminating the threat of a Soviet attack.



In 1980, Sandia/California acquired the corporation's first "supercomputer," the Cray 1-S. Providing 300,000 words (4 million bytes) of memory, the Cray was 20 times faster than earlier computers, which allowed the solution of previously intractable problems. The new computer cut its teeth on a major weapons program - the W76 for the Peacekeeper missile.



In 1977, the last earthquake was attributed from the site.

1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Eisenhower Administration (R)					Kennedy Administration (D)				
The Soviet Union launched the world's first artificial satellite, Sputnik 1, on Oct. 4, 1957.					On May 1, 1960 the Soviet Union downed Francis Gary Powers' U-2 over Turkey.				
The Soviet Union and the United States agree to a nuclear testing moratorium to begin November 1, 1958.					Sandia/California formed its first reliability organization in 1961 to help balance the needs of safety vs. reliability.				
In 1959 Betty Carrell became the site's first woman engineer.					In 1960, the site held its first Family Day.				
The Berlin Wall was erected in August 1961.					The Cuban Missile Crisis unfolded in October 1962 when the United States discovered that the Soviet Union had shipped nuclear missiles to Cuba.				
The 1963 March on Washington focused on passage of the Administration's proposed civil rights law.					In August 1965, the United States, Britain and the Soviet Union signed the Limited Test Ban Treaty prohibiting atmospheric tests to reduce fallout.				
In July 1965, Great Britain, the United States and the Soviet Union signed the Nuclear Non-Proliferation Treaty, which went into effect in 1970.					In 1968 the U.S. began its military presence in Vietnam.				
November 1969 saw the first use of tanks on the Strategic Arms Limitation Treaty (SALT) (begin in Helsinki, Finland).					In 1970, the credit union opened a Livermore branch.				
The SALT treaty was signed in May 1972. The Anti-Ballistic Missile Treaty also went into force in 1972.					On Oct. 17, 1973, Arab members of the Organization of Petroleum Exporting Countries announced they would embargo shipments to nations that had supported Israel in its conflict with Syria and Egypt.				
In 1973 the U.S. pulled its troops out of Vietnam.					In 1976, the last earthquake was attributed from the site.				
In 1976, 2,000 anti-nuclear demonstrators descended on Lawrence Livermore National Laboratory, but left the lower profile Sandia/California alone.					In March 1983, the nation's nuclear weapons program began a new direction, as President Ronald Reagan announced the Strategic Defense Initiative (SDI). Commonly known as "Star Wars," after George Lucas' popular science fiction film.				
On November 4, 1979, 66 Americans were taken hostage at the U.S. Embassy in Iran. Most remained in captivity for 444 days.									



CELEBRATING 50 YEARS

Sandia National Laboratories  
Livermore, California



1986-1996



Admiring the SRAM II in 1987 are, from left to right, Jim Woodard, Carl Pretzel, Russ Miller, and Dave Havlik.



Sandia's microbeam line at Lawrence Livermore National Laboratory's CAMS accelerator. Art Pontau is seated far left, then clockwise is Dan Morse, Dave Weirup (LLNL), and Arlyn Antolak. An upgraded version of that beamline is still operated by Dan and Arlyn and still productive.

The emphasis in this decade changed from designing and building the nuclear stockpile to dismantling and disposing of nuclear weapons and managing aging systems. One of the important Life Extension Programs, initiated in 1995, modified W87 warheads from retired Peacekeeper ICBMs for deployment on Minuteman III missiles. In the 1990s, Sandia/California also had responsibility for designing weapon transport containers, maintaining and improving weapons systems and vehicles, and supporting high-performance computing. Systems studies activities, begun in the 1960s to provide analysis to strategic planners about policies or programs, were consolidated into a single department. Congress, in 1989, created legislation that enabled national laboratories to partner with U.S. industry. Meanwhile, wisdom gleaned from experience designing weapons was collected through interviews in the Knowledge Preservation Project. By the end of the decade, the Cold War had ended and nuclear testing was halted.



This metal emissions experiment was used in 1992 for the development of laser-spark spectroscopy to monitor metal emissions.



David Andaleon manipulates a virtual object while looking through 3-D glasses in 1995.



Anti-submarine penetrator testing was carried out in the frozen Arctic Ocean north of Prudhoe Bay, Alaska, in 1987. Standing from left to right are Ron Franco, Dan Moniz, Dean Kuehl, Ray Rychovsky, and Roger Everett.



T.R. Thomson, Dick Claassen, and Gene Ives inspecting a B83 in 1986.



The new Integrated Manufacturing Technologies Laboratory was dedicated in 1992. The facility was later renamed the Micro and Nano Technologies Laboratory.



Sharon Norris, Emily Joiner, Teresa Higuera, Teresa Antolak, Gayle Allen, and Chuck Rüdberg say goodbye to IBM cards in 1988.



"Little Engine and the Thunderbirds," composed of Sandia managers, entertain at a LEAP fair in 1986. At the microphone is Dan Hartley. Behind him are, from left to right, Arlyn Blackwell, Rick Wayne (hidden), Larry Bertholf, and Gene Ives.



John Crawford became VP for Sandia/California in 1987.



Tom Hunter became VP for Sandia/California in 1995.

Completed in 1987, the Weapons Engineering Laboratory consolidated electronics research activities that had been conducted in facilities scattered around the site.

In 1989, Congress created Cooperative Research and Development Agreements for labs to partner with U.S. industry.

In 1991, the Tritium Lab was decommissioned as a step toward becoming the Chemical and Radiation Detection Laboratory.

Buildings 940, 941, and 942, collectively the Integrated Manufacturing Technologies Laboratory, were dedicated in 1992, later being renamed the Micro and Nano Technologies Laboratory.

1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995

Reagan Administration (R)

Bush Sr. Administration (R)

Clinton Administration (D)

- The space shuttle Challenger explodes during take off bringing the U.S. manned space program to a standstill.
- In March 1988, the U.S. and the Soviet Union signed the INF Treaty which included a freeze on the production of nuclear weapons and an agreement to destroy a number of existing intercontinental ballistic missiles.
- In August 1990, Iraq invades Kuwait, annexing Kuwait and its rich oil fields and ports.
- The war against Iraq begins on January 17, 1991, with air and missile attacks. The ground war begins on February 24 and lasts until February 27.
- On November 9, 1989, the East German government ended its restrictions on emigration and travel to the West by its citizens. The East Germans opened the wall that divided Berlin, and soon began to tear it down.
- On February 26, 1993, a powerful car bomb explodes in the underground parking garage beneath the World Trade Center in New York City, killing six and injuring more than 1000.



# Livermore’s favorite historian (and Sandia retiree) Barry Schrader recalls some choice Sandia/California moments, big and small

*Editor’s note: This column by retired longtime Sandia/California public affairs head Barry Schrader, a historian of the Livermore area, appeared in last Thursday’s The Tri-Valley Herald and is printed here by permission.*

March 8 marked the 50th anniversary of the arrival of a small contingent of engineers and support personnel in Livermore, mostly from Sandia Corp.’s laboratory in Albuquerque, N.M.

The two dozen staffers were first housed in the pink barracks across East Avenue at what was then known as the University of California Radiation Laboratory (now Lawrence Livermore National Laboratory) so they could provide increasing support for the design and testing of the new nuclear weapons being developed by the UC lab since 1952.



BARRY SCHRADER

The reason there were two separate organizations working on the same weapons goes back to the days of the Manhattan Project. After the end of World War II, the University of California was given the contract by the new Atomic Energy Commission to operate the nuclear weapons program that had started at Los Alamos.

But when asked to take over the engineering arm that was called Sandia (created out of Los Alamos’ Z Division), UC management balked, saying it preferred to stick to the pure science part of the project.

So in 1949 President Truman wrote a letter to AT&T asking its president to assume oversight of Sandia “to render an exceptional service in the national interest.” AT&T accepted with the proviso it would operate the engineering organization for \$1 a year and take no profit from it.

So Sandia has remained independent from Los Alamos and Lawrence Livermore national labs to this day. And Sandia management was smart in making the early decision to tear down the old Navy WAVE barracks on their new site, thus constructing all new facilities, while Lawrence Livermore has had to contend with the old Naval Air Station buildings to this day.

## First collaborations were B27, W27

Talking with Cliff Selvage, a retired Sandian who actually arrived in town six months ahead of the formal startup date along with another Sandian, Grover Hughes, I learned that the first project the two organizations collaborated on was the B27 bomb and its counterpart for the Regulus guided missile, the W27.

He even produced a photo showing him and LLNL colleagues on a barge at Eniwetok working on Project Redwing in the Pacific. He thinks those in the photo were Alan Work, Joe Livingston, Bud Loveland, Roy Higgen, Harry Perl, Dean Christensen, Fred Warren, Bill Lavigne, Hank Otsuki, and Roy Tidwell. He wonders if any of them are still around here today.

Cliff was then asked by Sandia management to be a part of the startup operation in 1956, but due to the loud protest of his wife at the time, since she was a New Mexico native and thought Livermore must be at the end of the world, he declined.

But by 1967, circumstances had changed and he accepted a later offer to transfer to Livermore and, except for some overseas International Energy Agency assignments, has stayed ever since.

Another early arrival from Albuquerque that first year was Lorena Schneider, who was brought out with another secretary to provide support for managers. The two spent their first five months living at the Town House Motel on First Street.

When she finally decided to accept a permanent assignment, she worked for Jack Howard, the first manager of the fledgling engineering department. She recalls the hot summers on the second floor of the barracks when there was no air conditioning. After 37 years at Livermore and five prior to that at Sandia Albuquerque, Lorena



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MARCH 23, 1956

Pictures on Pages 4 and 5

## Livermore Branch to Become Sandia’s Largest Satellite

Sandia Corporation’s new assignment, providing ordnance engineering support on a greatly expanded scale for the University of California Radiation Laboratory (UCRL) at Livermore, Calif., will result in the westward migration of some Sandians in the months to come and the hiring of a number of new employees from the Bay area.

In time the Livermore operation will become Sandia Corporation’s largest satellite activity, far surpassing the next largest “site” operation, Sallun Sea Test Base in southern California, where about 100 Sandians are employed. The following report on Livermore is of interest to all Sandians because the activities there will be typical of many operations here at “home base.”



Dr. H. F. York, UCRL Director, Livermore site



LIVERMORE BRANCH department manager, W. J. Howard, right, is pictured here with Robert W. Henderson, Director of Systems Development. Mr. Howard, who is now located at Livermore, reports to Mr. Henderson.

private physicians, have built hospitals in the vicinity.

Agriculture Tops

Agriculture is a big business of the area. Large cattle ranches of many thousand acres make the most of the green, grassy hills in the valley. Grapes flourish in the climate and there are many wineries producing white sauternes.

**Sandia Organization**  
The Sandia staff operating the Livermore Branch is headed by W. J. “Jack” Howard, manager of Engineering Department 1250, who reports to R. W. Henderson, Director of Systems Development, 1200.

There are two project divisions under Mr. Howard. C. R. Barnard heads Division 1251, with section supervisors A. B. Miller and W. A. Little reporting to him. W. B. Marsh is supervisor of 1252-1 and Mr. Brin is acting as supervisor of the other section, 1252-2.

Mr. Howard is acting supervisor of the Service Division 1253, and reporting to him are R. L. Siglock, supervisor of Section 1253-1 and James McMinn, 1253-2.

**Livermore Laboratory**  
The Livermore site is operated by

## F. J. Given Talks to AOA Members on Missile Problems

Fred J. Given, Vice-President of Research & Development Technical Services, will speak to the Albuquerque Post of the American Ordnance Association Apr. 5 at 7:30 p.m., in Room 122 of the Geology Bldg. at the University. Mr. Given will review a speech he recently presented to the AOA in Washington. Various problems encountered in the missile program will be discussed.

## Pedestrians Asked To Cross Streets At Intersections

Sandia Corporation employees at Sandia Base have been requested to observe pedestrian traffic signs on Main Street between G and H Streets directly west of Bldg. 800. These signs, placed there by the Provost Marshal’s office, instruct pedestrians to cross only at the intersections. Crossing between intersections is a violation of Base traffic regulations.

At the suggestion of the Corporation, the Provost Marshal has considered placing a crosswalk on Main Street immediately west of Bldg. 800 with a “Stop For Pedestrians” sign. However, this was felt to be impractical for the sign would not be in position during lunch hour and at quitting time when motor vehicle traffic is at its peak. At rush hours pedestrians must yield the right of way to facilitate flow of traffic. The Military Police feel that there would not be sufficient pedestrian traffic at that point to warrant such a sign during other hours.

During peak hours a military policeman is on duty directing traffic at the nearby intersection, and if automobile traffic were interrupted by pedestrians a traffic jam would result. This would expose motorists and pedestrians to possible accidents.

## AWS Meets

The American Welding Society meets tonight at 7:30 in the UNM Industrial Arts Building. Vince Nelson of American Car and Foundry will discuss Photo-Elastic Studies of Weld Design.

## Sandia Scientist Tells DOD Group of Electron Tube Work at Corporation

Dr. J. H. Findlay, manager of the Electronic Component Development Department, 1450, described electron tube work at Sandia Corporation last week in New York to the Department of Defense’s Advisory Group on Electron Tubes.

Dr. Findlay told that one of the functions of the Corporation’s Electronic Component Development Department is to decide what types of tubes are needed in instruments and components, write performance specifications, help procure the tubes and then test development samples.

He said that such tubes are used by the Corporation in fuzing and arming systems such as radar, power supplies and power conversion units, in test equipment and telemetering apparatus.

Dr. Findlay, who joined Sandia Corporation in December, 1953, received his PhD at Princeton University in 1930. He holds a B.S. and M.S. degree in physics from Queens University, Ontario, Canada.

Prior to coming here, he had been manager of Engineering for power and special purpose tubes at Westinghouse Electric Co. He is a member of the Institute of Radio Engineers, American Physical Society and the American Association for the Advancement of Science.

Dr. Findlay and his wife reside on Sandia Base.

## T. T. Robertson Named Supt. of Organization 7400

T. T. Robertson has been named Superintendent of Drafting and Specifications, 7400, reporting to F. J. Given, Vice-President Research & Development Technical Services.



T. T. Robertson —superintendent 7400—

7400. The appointment was effective Mar. 16.

Drafting and Specifications superintendency was created Jan. 1, 1956, when F. J. Given was appointed Vice-President. Mr. Given has been leading the organization temporarily. A native of Scotland and a naturalized U.S. citizen, Mr. Robertson received his advanced education at Heriot-Watt College in Edinburgh, Scotland.

Since 1936, Mr. Robertson has been with Bell Telephone Laboratories and prior to coming to Sandia was supervisor of Drafting in the Military Development Dept. Previous employment included positions with DeForest Radio, Sylvania Corp., Worthington Pump and Carrier Engineering Corp.

In February, 1950, he became a consultant to Sandia Corporation and in August of that year was named division supervisor in drafting. In September, 1951, he was appointed manager of the Engineering Services Department.

Mr. Robertson’s successor as Manager of the Engineering Services Department, 1640, has not yet been announced.



CHIN FERN ASSORTMENT in the drafting room of Building 800 is being cultivated to celebrate Albuquerque’s 250th Anniversary pageant in July. L to R are Lewis A. Caffo 7411-7, Philip Park 7412-4, Merrill H. Merry 7412.

THE SANDIA LAB NEWS, by 1956 already in its eighth year, splashed the launch of the California site on the front page of that year’s March 23 issue. The article discussed the special design/engineering relationship the Labs’ West Coast home would have with what is now Lawrence Livermore National Laboratory. A center spread of photos in the issue showcased the California location as a desirable place to live.

retired and now lives in Florida.

Sandia’s Livermore Branch grew to 1,000 people in just a few years, but never grew beyond 1,100 because growth control was exercised by the headquarters in New Mexico.

## Sandia Anthology, Remember When

Over the years there were some lighter moments, as reported in a 1996 book called *Sandia Anthology, Remember When*, assembled by Cindy English and her boss Cliff Yokomizo. Inside those 125 pages are great stories, remembrances, old memos, cartoons, and humorous photos collected from desk drawers, filing cabinets, and walls from across the site.

The book includes some instances of frivolity I still recall: One day in 1986 the directors decided to smuggle a horse on site after then-Vice President Dick Claassen threatened to rid the site of unsightly and illegally parked bikes. They offered this hoofed alternative to the VP and he surprised them by mounting the steed and riding it. They didn’t know he was an amateur equestrian!

In 1992, then-VP John Crawford was holding a Teamwork Celebration Day. We found out it

was also his birthday, so colleagues hired the East Avenue Middle School Band, led by Bernie Berke, to be bused to the lab and hidden until the appropriate moment when we could surprise John.

Then there was the farewell for VP Tom Hunter, when we bought him a fancy belt

buckle, even bigger than the one worn at the party by Lawrence Livermore Lab’s Bob Kuckuck, who had beaten Tom in the Rodeo Week green-horn calf-penning event. We didn’t want Tom to leave town feeling second-rate. It must have boosted his ego, because now he is president/director of Sandia.

There will be a lot of reminiscing like this when retirees and longtime employees gather to celebrate the Livermore Branch’s 50th anniversary [which occurred the week of March 6]. But don’t let anyone dig up the time capsule that was buried there in 1999 when Sandia Corp. observed its 50th. The plaque clearly states it is not to be unearthed until 2024.

Barry Schrader can be reached via e-mail at [historian2@sbcglobal.net](mailto:historian2@sbcglobal.net) or at Box 446, Livermore, CA 94551. His website is <http://www.historydetectives.info>



# Manager promotions

## New Mexico

**Jim Aubert**, from PMTS, Organic Materials Dept. 1821, to Manager of that same department.

Jim has been at Sandia since 1982. His work with Sandia has encompassed foams, coatings, adhesives, rheological measurements, supercritical fluids, and materials for high-energy physics targets.

He has received the DOE Award of Excellence for materials development a number of times, including one in 2002 for work with a team that developed removable encapsulants.

Jim holds six patents and is the author of numerous publications. He was previously the division supervisor of the target fabrication division and the manager of the organic materials department.

Jim has a BS in chemical engineering from the University of Michigan and an MS and PhD in chemical engineering from the University of Minnesota.



JIM AUBERT

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**Shack Burns**, from DMTS, Information Systems Development Dept. 5522, to Manager, ICADS/GNT Project Management Dept. 5746.

Prior to joining Sandia, Shack was an Air Force pilot for eight years, flying F-4s and T-38s. Then he developed cockpit display software for the F-15E at McDonnell Douglas. He moved to Honeywell in Albuquerque where he led software teams developing avionics software.

Shack joined Sandia in 1995 on the Integrated Correlation and Display System (ICADS) project. He has worked for the last nine years as the lead of the architecture team, defining the high-level design of the next generation of ICADS ground station. ICADS successfully completed system verification testing in December 2005 and is scheduled to be accepted by the Air Force in November 2006.

Shack has a BS in computer science from the United States Air Force Academy.



SHACK BURNS

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**Bill Cook**, from Manager, Knowledge Discovery and Extraction Dept. 5631, to Senior Manager, Advanced Concepts and Systems Analysis Dept. 5630.

Bill first joined Sandia in 1981 to work in the central computing organization as an MTS developing network and security software systems. He then became involved in work for others programs where he developed software and led software development teams in the areas of facility management, telecommunications, command and control, networking, network management, information security, database, and operating systems.

He worked as an assistant to the director of the Monitoring Systems and Technologies Center and International Security Programs. Bill was the IT and program operations deputy for the remote sensing and verification program with primary involvement in international safeguards, proliferation detection, IAEA, DOE/NN, and DNA.

Bill also managed a group doing software and physics-based modeling and analysis of nuclear detonation and transmission phenomenology for the Air Force and DOE.

He executed the information technology/

computer science-retraining program, a corporate-level retraining program to provide people trained in computer science and system administration.

He managed several departments concerned with knowledge discovery and management and developed software systems for a variety of customers to apply advanced technology to the process of making decisions.

Bill has a BA and an MA in mathematics from the University of Missouri and an MS in electrical and computer engineering, an MS in chemistry, and a PhD in chemistry from the University of New Mexico.

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**Roy Fitzgerald**, from Business Service Manager, Homeland Security SMU Business Office Dept. 10542, to Senior Manager and Deputy Chief Financial Officer in Dept. 10030.

Roy has been with Sandia since 1989, serving in a variety of staff positions including that of contract auditor, price and cost analyst, and Sandia Contracting Representative.

As an international contracting representative, Roy was responsible for coordinating technical and cost estimates, reviewing and analyzing proposed costs on these proposals, and negotiating contracts on Sandia's behalf.

In 2001 he was promoted to DMLS and in 2002 was promoted to manager of International Contracting and Import/Export Control Dept. 10245. He worked with customers, external stakeholders, and outside counsel to identify and codify the best guidelines for use in international contracting at Sandia.

Roy implemented the internationally recognized principle of the ISO 9001:2000 standard for Quality Management Systems in 2003. Sandia's International Procurement Team (10245) was the first procurement organization within the DOE complex to be registered to this standard.

In 2004, he became business manager of a team selected to create a new Homeland Security Initiative and management unit at Sandia. He developed and implemented operational and strategic business models, systems, and processes for the unit.

Before coming to Sandia, he worked with several public accounting firms.

He graduated from New Mexico State University and in 1987 was licensed as a Certified Public Accountant by the New Mexico State Board of Public Accountancy.

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**Steve Kleban**, from PMTS, Critical Infrastructures Modeling and Simulation II Dept. 6222, to Manager, National Systems Modeling and Simulation Dept. 6226.

Steve began working for Sandia in 1993. He initially worked on environmental impact analysis systems for manufactured goods. He developed the reasoning component of SmartWeld, a design to analysis environment for welding. He also worked on several expert advisor systems for manufacturing including a materials selector and joining advisor.

Steve also developed a general web-based approach to knowledge management and most recently has worked on distributed simulation, data management, and knowledge management for efforts on DHS projects.

He specializes in knowledge management, distributed architectures, collaborative systems, knowledge-based reasoning systems, and super-computer performance analysis.

Steve has a BA in computer science from the University of California, San Diego, and an MS in computer science from the University of New Mexico.

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ROY FITZGERALD

## California

**Art Pontau**, from Manager, Microfluidics Dept. 8324, to Senior Manager, Materials and Energy Sciences Group 8750.

Art joined Sandia in 1978 and spent his first 17 years in Dept. 8347, first as a staff member, then as manager of the Physical Research Division. He undertook multiyear research programs of hydrogen and helium in materials, plasma-materials interactions, and accelerator-based analysis of materials. Sponsors for his work included Defense Programs, the Magnetic Fusion Energy program, the Strategic Defense Initiative, and DOE Non-Proliferation. Partnerships were a large part of the department's efforts and led Art to work on Sandia's behalf in Germany for more than a year in the mid-1980s.

In the late 1990s, Art worked in four different jobs, directly supporting Sandia VPs. Following that era, he went on to manage the Microfluidics Department, where basic microfluidics research is conducted, the liquid-phase MicroChemLab bio-agent detection system was developed, and insulator-based dielectrophoresis (iDEP) was created for bio-sample processing.

He has participated in several teams that have created leadership development programs for the Labs.

Art has a BA in physics and mathematics from the University of California, San Diego, and a master's and PhD in physics from the University of Illinois at Urbana/Champaign.



ART PONTAU

## Recent Patents

Kevin Ewsuk (1815) and Jose Arguello Jr. (1525): Method for Die Design and Powder Pressing.

Joseph Cesarano III (1815), John Stuecker (American Staff Augmentation), Jennifer Dellinger (1815), and Russell Jamison (University of Illinois): Method for Making a Bio-Compatible Scaffold.

Clifford Ho (6115) and Paul Reynolds (Team Specialty Products, Inc.): Methods for Characterizing Subsurface Volatile Contaminants Using In-Situ Sensors.

Ron Renzi (8214): Modular Optical Detector System.

Tim Shepodd (8762): Polymer Formulation for Removing Hydrogen and Liquid Water from an Enclosed Space.

Murat Okandan (1749), Paul Galambos (1769), Gilbert Benavides (2616), and Dale Hetherington (1746): Micro-Fluidic Interconnect.

## Sandia News Briefs

### Jackie Kerby Moore elected president of Association of University Research Parks

Jackie Kerby Moore (10105), executive director of the Sandia Science & Technology Park, has been elected president of the board of directors of the Association of University Research Parks (AURP). The move came at the recent annual AURP conference in Raleigh, N.C. Jackie has served on the board since 2002. Currently 108 operating research parks and 35 planned research parks in the US are members of AURP.

### Retiree deaths

Edward W. Roche (age 69)	February 1
Gloria R. Toland (74)	February 1
Everett R. Gourley (89)	February 9
William W. Rowe (83)	February 10
Roscoe T. Williams (78)	February 12
Mary D. Walker (81)	February 13
Gordon E. Cheek (90)	February 15
Charles Henry Maak (88)	February 16
Onofre Candelaria (75)	February 17
Doris L. Pouard (81)	February 20
Richard A. Miller (86)	February 28



# Proactive, success-focused Behavior Based Safety identified as essential to reducing accidents

By Iris Aboytes

Three words — Behavior Based Safety, or BBS — may hold the key to a safer Sandia population, say Labs executives. What is Behavior Based Safety? It is a systematic way to identify behaviors that prevent accidents; remind, reinforce, and refocus workers on these behaviors; and measure and manage these behaviors proactively as leading indicators of accidents.

You're going to be hearing a lot more about Behavior Based Safety from now on. Sandia has contracted with ProAct Safety, a Woodlands, Texas, firm, to help implement BBS. "Sandia can expect a 60 to 85 percent reduction in injuries over a three-year period after implementing BBS," says Terry Mathis, president of ProAct Safety, "based on our experience in helping to implement BBS in more than 800 organizations during the past 15 years."

Piloted in Division 10000 in 2005, early results indicate a trend toward fewer accidents. BBS supplements, but does not replace, traditional safety programs and efforts. Prerequisites such as no punishment for at-risk behaviors, fast removal of barriers to doing work safely, workers managing/running the process, and anonymous observations are mandatory to making BBS a success.

To launch the BBS pilot, Division 10000 created a Strategic Planning Team, with three members of management, three union officers, and one BBS advisor. They have trainer facilitators in construction, maintenance, logistics, and office work. Three steering committees designed and managed the BBS for the three types of work done in the division — construction, facilities operations, and office work. More than 120 Sandians in the division have been trained to be observers.

"Behavior is simply an observable act," says ES&H Assurance, Planning, & Behavior Based Safety Manager Al Bendure (10312). "Perceptions, habits, and barriers all create behaviors." In BBS, employees actually manage and run the BBS

ment, BBS has positive reinforcement. "Many injuries are the result of the unsafe actions of employees," says ES&H Director Phil Newman (10300). "This is why BBS is the key to our success in driving down accidents."

Across the country consequences of carelessness and inattention to safety issues such as the recent mining accidents and the aircraft mechanic being sucked into a jet engine are examples of avoidable accidents, say Sandia's union representatives. They say they are pleased with the great strides Sandia has made toward changing the safety culture at all levels.

In BBS, observers are trained in safety. Their concern is not about being right or wrong, but about keeping Sandians safe. "When I came to Sandia and was at a grocery store wearing my badge," says Al, "a San-

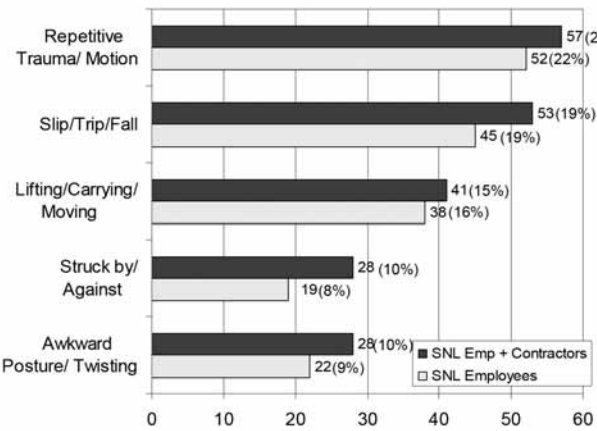
dian whom I did not know came and told me I was wearing my badge (which is not the thing to do in public). I did not hesitate as I put my badge in my pocket. That is the kind of trust we hope to build among employees."

In the Kevin Spacey movie *Pay it Forward*, a boy responding to a class assignment comes up with an idea to improve life. He determines to help three people in a "special, life-changing way."

Instead of having them pay him back for his kindness, he tells them to pay it forward, that is, to help three people. Then they require the same pay it forward philosophy. Getting a coworker out of harm's way can be "special, life-changing."

"Individuals have little control over conditions," says Sandia VP and ES&H champion Frank Figueroa (10000), "but do have control over behavior. We need to look out for each other — remove the obstacle, hold a hand, caution a colleague. Each one of us has the power to make a difference. Use that power."

## Top 5 causes of injuries requiring more than first aid in CY05:



74% of the injuries in CY 05 that required more than first aid were from these five causes.

## What would have prevented these injuries?

- Keeping eyes on path and task
- Avoiding repetitive motion (taking breaks)
- Staying out of the path of moving objects
- Using good body alignment
- Getting help

62% of all CY 05 injuries could have been avoided with these precautions.

process. Peer observers identify concerns and ask why. "BBS fixes the problems, not the blame," says Al. "We hope to introduce all Sandians to BBS by the end of September."

Observers watch their peers perform their work. They look for a critical few precautions that would prevent the majority of the injuries experienced by members of their group. Observers reinforce safe performance and offer suggestions for keeping out of harm's way. They coach colleagues on perceptions or habits and identify barriers. Data from observations are anonymous and are entered into a database and analyzed by the steering committee. The committee brings concerns to management's attention for addressing identified barriers.

Traditional safety data are looked upon as reactive. BBS is proactive. Traditional safety has rules and procedures. BBS has a behavioral focus. Traditional safety measures failure rates. BBS measures success rates. Traditional safety has compliance. BBS has cooperation. Instead of punish-

## You must update dependent info for UHC/CIGNA

Sandia's Benefits Department reminds you to update your dependent Coordination of Benefits (COB) information for UnitedHealthcare and CIGNA.

If you haven't already done so, they say, please update COB information for any dependents you have enrolled in your UHC or CIGNA medical plan. You must provide this update even if your dependents do not have other insurance. If you do not provide this information,



UHC/CIGNA will pend the claim and request verification in writing from the employee for other insurance. If it is not

provided, the claim will be denied.

To avoid any delays in processing of dependent claims, you can provide this information if you are enrolled in a UHC medical plan through myuhc.com or by calling the UHC Customer Service Center at 1-877-835-9855.

If you are enrolled in a CIGNA medical plan, you can use mycigna.com or call CIGNA's Customer Service at 1-800-244-6224.

Note: If you are other than an employee, and your dependent has Medicare as their primary coverage, you do not need to do this.

\* \* \*

**UnitedHealthcare to Reissue Identification Cards . . .** For administrative purposes, UHC was required to change the PO box claims filing address for Sandia from P.O. Box 30555, Salt Lake City, UT 84130-0555 to P.O. Box 740809, Atlanta, GA 30374. UHC will reissue new ID cards to all participants. The new cards reflect this Sandia-specific address, which should be used for all future correspondence. No action is required on your part for any information you may have mailed to the prior PO box. You should destroy your old card(s) and use these new cards effective

## Retirees needed for Labs' latest Habitat for Humanity project

Retirees are needed for Sandia's seventh Habitat for Humanity House. Here are some details:

- April 8 through mid-June
- Near Avenida Cesar Chavez/Isleta Blvd.
- Job Captains — Duane Hughes, Larry Lane, Bob Rieden, Irv Hall (all retirees)
- On-call retirees are needed to work with the job captain as needed during the week.

For more information and to sign up to be on the "on-call" list, call Amy Tapia at 284-5207. No construction experience is required.

## Medicare drug coverage talk for Sandians, retirees March 27

Michael Parks, an attorney at the Senior Citizen Law Office, will address interested Sandians and retirees on Medicare Drug Coverage on Monday, March 27, from 12 noon to 1 p.m., in the Steve Schiff Auditorium (Bldg. 825, Technology Transfer Center). A nuts and bolts Q and A session will follow his remarks.

Parks' address is being hosted by the Sandia Sandwich Support Group, which is sponsored by Sandia Medical. The group is open to all Sandians who are caring for an aging loved one. Attendance at the briefing does not require a badge so all are welcome.

If Sandians or their love ones have immediate concerns about Medicare drug coverage, they are encouraged to contact the local Hot Line at 830-3096. Direct questions about the presentation to Dick Steele (10004) 284-4353.

immediately. Your new cards are identical to your old cards except for the PO box mailing address.

Please ensure that your provider(s) use the new PO box in the future. UnitedHealthcare apologizes for any inconvenience this may cause. If you have any questions or you do not receive a new ID card, please call UnitedHealthcare Customer Service at 877-835-9855.



# Mileposts

New Mexico photos by Michelle Fleming



David Huskisson  
35 2555



Michael Kopczewski  
30 12347



Jesus Martinez  
30 4225

## Recent Retirees



Gerald Miller  
30 2724



Martin Molecke  
30 6141



Alan Smith  
30 6451



Gary Webb  
30 5724



Victor Yarberry  
30 1737



Mike McClafferty  
20 2733



Arthur Payne  
25 245



W. Kent Schubert  
25 1723



Michael Widmer  
25 10762



Kent de Jong  
20 2993



John Hunter  
20 6428



Judy Borrowdale  
15 10100

## Kilimanjaro

(Continued from page 16)

Everyone, including Kevin, reluctantly conceded the obvious: Kevin was too sick to continue on the trek. He was evacuated the next day, accompanied by a guide and several porters.

(Months after the expedition, Kevin's condi-



HOME AWAY FROM HOME — Camp 5 for the climbers and their guides. From this camp they would continue their eight-day climb to Kilimanjaro's Uhuru Peak at 19,340 feet.

tion continued to deteriorate until a doctor ordered an emergency appendectomy near Christmas time. During the operation, it became clear that Kevin's failing health was the result of his appendix rupturing that night on Kilimanjaro. Doctors say he is incredibly lucky to have survived.)

As the team, now without Kevin, continued the long ascent, they began to experience unwellcome symptoms, and there was no doubt about the cause: altitude. The physical burden of lack of oxygen slowed the team's pace and required frequent breaks. At camp that night, the temperature dropped to 15° F, and some team members resorted to lining their socks with hand warmer packets in an attempt to ward off the biting cold.

As the eve of the team's summit day dawned, the team faced the most technical part of the

entire climb, a stretch featuring 2,000-foot drop-offs, steep grades covered in loose rock, and a class 3 rock climb requiring climbing helmets and harnesses.

By late afternoon, the group was wearily clamoring into Kilimanjaro's volcanic crater. While most of the group began settling into camp for the night, Rick and Mike climbed the extra distance to the mountain's inner crater and ash pit. The two found the view of the inner crater and ash pit amazing — arguably even more beautiful and awe-inspiring than Uhuru Peak would offer the following day.

**Final push to the peak**

The final push to the peak began at dawn the next day. Team members mustered every last ounce of energy, breath, strength, and balance as they embarked on the final 500-foot climb in elevation. In what was the most physically demanding part of the climb, the team could only slowly lumber up the loose footing of the trail. Any quick movements would leave the climbers breathless and their hearts racing in their chests. As they persistently pushed forward, they remained focused on their distant goal of Uhuru Peak.

After an hour and a half of labored climbing, the expedition came to rest 19,340 feet above the massive continent of Africa. "It was sunny, warm, and beautiful at the top; no wind or snow," says Mike. "Everyone shook hands and exchanged congratulations."

Before beginning the quick-paced descent back down to mountain's base, and inevitably, everyday life, the members of the team began to grasp an appreciation of their own circumstances through a new perspective.

"Climbing Mount Kilimanjaro was the most difficult . . . and rewarding goal," says Pauline. "The last few days of the climb brought me to

new levels of self confidence . . . ."

In Mike's account of the journey, he found himself tested in a profound way on all levels: "physically, mentally, and emotionally."

The group can't praise their guides highly enough, crediting them for the success of the climb and the safety of those who participated.

"The Tanzanians are among the most courageous, proud people I've ever encountered . . . they really went to great lengths to take care of us on the hike," says Pauline. "I didn't feel I came



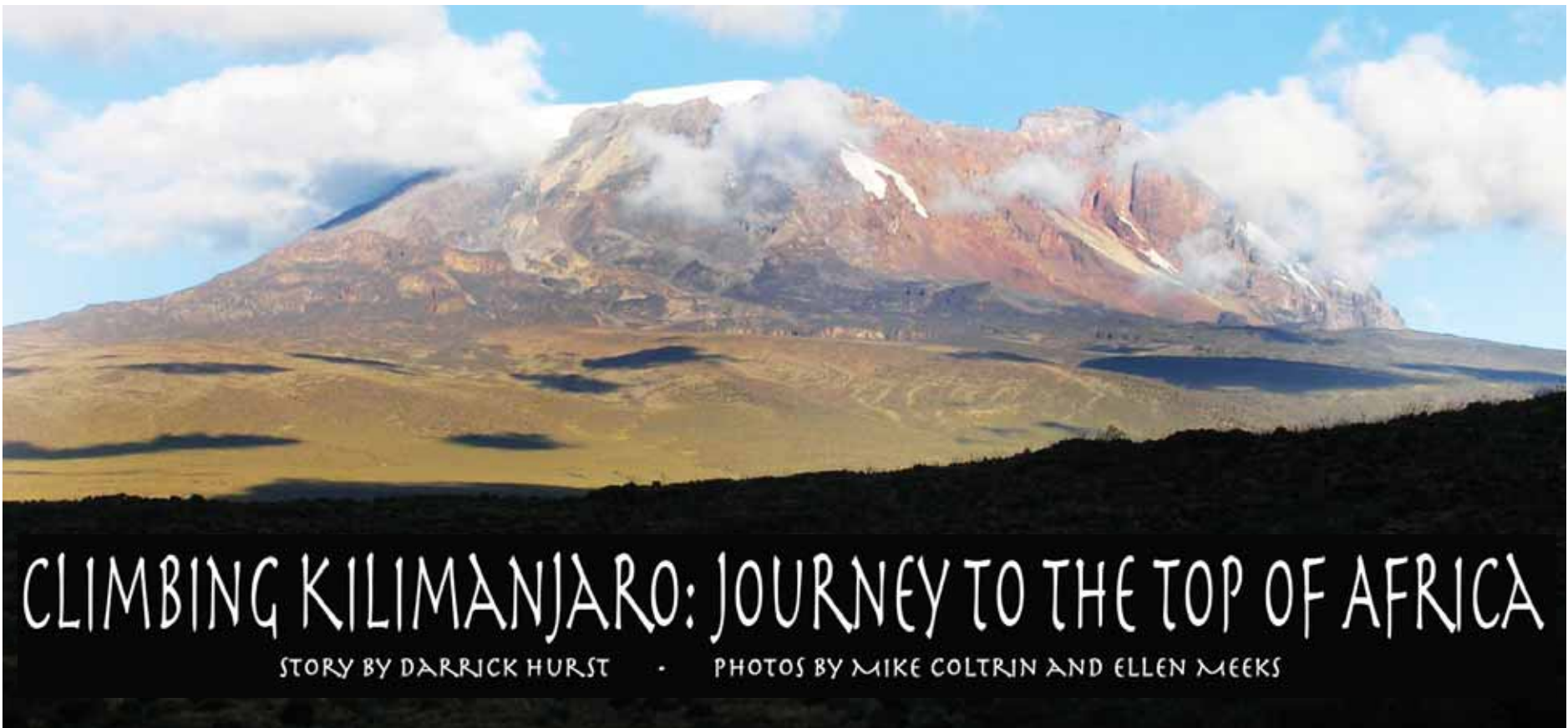
ELLEN MEEKS (foreground) with Pauline Ho (6245) and their guides making their way up the trail to the top of Kilimanjaro. The ascent to the top would take several more days of rigorous climbing.

away with the same kind of life-altering experiences some people come away from Kilimanjaro with, but looking back on my trip, you see that you can't always take the small things too seriously."

As the team looked out on the glaciers and plains from the summit and recalled how much they had to overcome to make the journey, they found a rewarding sense of accomplishment. As Pauline puts it: "Although it was the most mentally and physically challenging thing that I've ever done, I returned home more relaxed – or maybe 'serene' is the word — than ever."

Serene — like the view from atop Africa's mighty Kilimanjaro.





# CLIMBING KILIMANJARO: JOURNEY TO THE TOP OF AFRICA

STORY BY DARRICK HURST • PHOTOS BY MIKE COLTRIN AND ELLEN MEEKS



At 8 a.m. last Sept. 9, Pauline Ho, Rick Buss, Ellen Meeks, and Mike Coltrin stepped triumphantly onto the highest summit on the African continent. As the team gazed upon the glaciers and plains stretching out below them, they reflected on how much they had overcome in reaching this serene vista. Together, they had just endured the most mentally and physically challenging thing they had ever done — conquering Mount Kilimanjaro.

This unlikely team of hikers became friends years earlier through their work at Sandia's New Mexico and Livermore sites. Spouses Rick (1517) and Pauline (6245) met the couple Kevin McCarty (8756) and Ellen Meeks (formerly 8757, on entrepreneurial leave with Reaction Design) at Livermore through coworker Mike Coltrin (1126). The idea to climb Kilimanjaro came one day while casually discussing climbing distant mountains, and soon the group began making plans to reach the peak.

## 'Conceivably' is key term here

Climbers describe Kilimanjaro as a "nontechnical" climb because, conceivably, any fit person can climb it. "Conceivably" is the key term here. The 19,340-foot ascent to Kilimanjaro's highest peak (called Uhuru) is rife with dangers and obstacles. Of the nearly 15,000 people who

attempt to climb Kilimanjaro every year, fewer than 40 percent reach the summit. Even though the team members are all experienced hikers, they agree that reaching the summit of Kilimanjaro was tougher than they expected, pitting their stamina and abilities against Tanzania's great mountain. Over the course of the eight-day climb, Mike, Pauline, Rick, Ellen, and Kevin transitioned



ON THE SUMMIT — Pauline, Rick, Ellen, and Mike with their Tanzanian guides gathered atop Uhuru Peak, Tanzania, Africa's highest point.

through six distinct climate zones — from steamy, fertile grasslands to Kilimanjaro's barren, arctic summit. The mountain's equatorial location and incredible height create the extraordinary conditions for experiencing almost every climate type on Earth during the journey to the top. Eight days before "summit day," the expedition began, venturing out into the forests of Tanzania early on the morning of Sept. 2. Spotted monkeys and exotic birds watched curiously as the team ram-

bled through the lush Tanzanian vegetation, led by guides Elias (pronounced "el-LEE-as") and Charles Malisa. Energized by the excitement of the journey, the Americans and Tanzanians conversed about where they were from and the jobs they did when they weren't climbing massive mountains. At this stage of the adventure, talk — and breath — came easy.

As the team settled into camp that first evening, they carefully took note of their vital signs and oxygen levels, a practice they would observe religiously on the trek. One of the greatest obstacles facing them would be the harsh effects that extreme altitudes would have on their bodies. Ultimately, every member of the ascent team experienced some degree of altitude sickness.

In the worst cases, altitude sickness can quickly become a disorder known as acute mountain sickness — a familiar affliction of experienced climbers. At high altitudes, the lack of oxygen can inflict severe headaches, nausea, dizziness, disorientation, muscle pain, and even death upon its victims. On Day 2, emerging out of the rainforest, the group was rewarded with their first

glimpse of their destination: the Kibo volcano. As cloud cover lifted from around the summit, the team stopped to relax, and using Rick's binoculars, looked across the Shira Plateau to the Lava Tower, the trail to Arrow Glacier, and the Western Breach — the landmarks that would serve as mileposts for the rest of the trek.

## Commotion on the fifth night

The climb progressed remarkably well until the camp awoke in a commotion on the fifth night. Kevin McCarty, who had been experiencing heartburn and digestive troubles the last couple of days, had suddenly taken a turn for the worse. His body temperature was plummeting, and he had begun vomiting uncontrollably. The team's guide, Elias, fed him hot water and honey in an attempt to bring his temperature back to normal.

The team was deeply concerned about Kevin's health. No one knew what was wrong, but it seemed clear it wasn't altitude sickness.

(Continued on page 15)



KILIMANJARO'S KIBO VOLCANO'S inner crater and ash pit. From here, the climbers would start the next day at dawn for the final push to reach Uhuru Peak.



ON THE WAY UP — Progressing up the trail, climber Mike Coltrin (1126, foreground) and colleagues pause to take in the views and take a few photographs.